appended claims.

CLAIMS

1. A method for trimming a functional resistor, the method comprising:

providing a thermally-isolated micro-platform on a substrate;

placing a plurality of thermally-trimmable functional resistors on the thermally-isolated micro-platform;

subjecting a portion of the thermally-isolated micro-platform to a heat pulse such that a resistance value of one of said plurality of functional resistors is trimmed while a resistance value of remaining ones of said plurality of functional resistors remains substantially untrimmed.

2. A method as claimed in claim 1, further comprising placing a heating resistor on the thermally-isolated micro-platform in close proximity to at least one of the plurality of functional resistors, wherein said subjecting a portion of the thermally-isolated micro-platform further comprises passing a signal through the heating resistor to increase its temperature significantly for the purpose of trimming said at least one of said plurality of functional resistors without substantially affecting remaining ones of the plurality of functional resistors on the thermally-isolated micro-platform

3. A method as claimed in claim 2, wherein placing a heating resistor on the thermally-isolated micro-platform further comprises placing said heating resistor such that it is electrically isolated from said at least one of the plurality of functional resistors.

4. A method as claimed in any one of claims 1 to 3, wherein said subjecting comprises providing a plurality of electrical pulses and measuring said resistance value of one of said plurality of functional resistors in between each of said plurality of electrical pulses to determine whether a target resistance value has been obtained.

5. A method as claimed in any one of claims 1 to 4, wherein said heating comprises providing dynamically-shaped electrical pulses to achieve substantially constant temperature as a function of time during a trimming pulse.

6. A method as claimed in claim 2, wherein said placing a heating resistor on the thermally-isolated micro-platform further comprises placing said heating resistor such that it traces said at least one of said plurality of functional resistors.

7. A method as claimed in claim 6, wherein said heating resistor is placed along an outside portion of said functional resistor to obtain a substantially constant temperature distribution across said functional resistor.

8. A method as claimed in any one of claims 1 to 7, further comprising raising said thermally-isolated micro-platform's temperature to trim downwards values of all trimmable functional resistors on said thermally-isolated micro-platform, measuring said trimmable functional resistors, and individually trimming upwards each of said trimmable functional resistors.

9. A method for providing and trimming a circuit, the method comprising:

providing at least one thermally-isolated micro-platform on a substrate;

placing at least two resistive elements with non-zero temperature induced drift on said at least one thermally-isolated micro-platform, such that said at least two resistive elements on said at least one micro-platform are subjected to a substantially same operating environment, at least one of said at least two resistive elements on said at least one micro-platform being thermally trimmable;

trimming said at least one resistive element on said at least one micro-platform to trim said circuit by thermal cycling;

connecting said at least two resistive elements together in said circuit in a manner to compensate for said operating environment on said at least one micro-platform;

wherein heat generated during operation on the at least one micro-platform is distributed among said at least two resistive elements such that temperature drift is substantially compensated.

10. A method as claimed in claim 9, wherein said connecting said at least two resistive elements together comprises connecting said two resistive elements in series, wherein an applied voltage is divided with a predetermined ratio.

11. A method as claimed in claim 9, wherein said placing at least two resistive elements of said circuit on said at least one thermally-isolated micro-platform comprises said at least two resistive elements to be temperature sensitive elements located closely on said at least one thermally-isolated micro-platform, and whose signals are combined to measure a temperature differential induced during operation.

12. A method as claimed in claim 11, wherein said signals are combined to measure a temperature differential induced by a gas movement.

13. A method as claimed in claim 9, further comprising placing a heating resistor on the at least one thermally-isolated micro-platform in close proximity to said at least one resistive element, wherein said trimming said at least one resistive element further comprises passing a signal through the heating resistor to increase its temperature significantly for the purpose of trimming said at least one resistive element.

14. A method as claimed in claim 13, wherein said heating resistor and said at least one resistive element are on separate thermally-isolated micro-platforms.

15. A method as claimed in any one of claims 9 to 14, wherein said trimming comprises providing a plurality of electrical pulses and measuring said resistance value of one of said at least two resistive elements in between each of said plurality of electrical pulses to determine whether a target resistance value has been obtained.

16. A method as claimed in any one of claims 9 to 15, wherein said heating comprises providing dynamically-shaped electrical pulses to achieve substantially constant temperature as a function of time during a trimming pulse.

17. A method for trimming a functional resistor, the method comprising:

providing a thermally-isolated micro-platform on a substrate;

placing a functional resistor on said thermally-isolated micro-platform;

subjecting said functional resistor to a heat source having a power dissipation geometry adapted to obtain a substantially constant temperature distribution across said functional resistor when a temperature of said functional resistor is raised for trimming purposes; and

trimming said functional resistor using at least one heat pulse.

18. A method as claimed in claim 17, wherein said trimming comprises passing a signal through said functional resistor, said functional resistor providing said heat source.

19. A method as claimed in claim 17, wherein said subjecting comprises placing a heating resistor on said thermally-isolated micro-platform in close proximity to said functional resistor, and wherein said trimming comprises passing a signal through said heating resistor to trim said functional resistor.

20. A method as claimed in claim 19, wherein said subjecting further comprises designing a heater path to encircle said functional resistor.

21. A method as claimed in any one of claims 17 to 20, wherein said subjecting comprises supplying more heat around edges of a region in which most of said functional resistor resides, in order to counteract a faster heat dissipation in said edges and resulting temperature gradients across the thermally-isolated micro-platform.

22. A method as claimed in claim 19, wherein said subjecting further comprises designing a heater path to substantially enclose said functional resistor with said heating resistor.

23. A method as claimed in any one of claims 17 to 22, wherein said subjecting comprises increasing a density of resistive lines near locations where there is greater heat loss to compensate for the heat loss.

24. A method as claimed in any one of claims 17 to 22, wherein said trimming comprises providing a plurality of electrical pulses and measuring said resistance value of one of said plurality of functional resistors in between each of said plurality of electrical pulses to determine whether a target resistance value has been obtained.

25. A method as claimed in any one of claims 17 to 22, wherein said trimming comprises providing dynamically-shaped electrical pulses to achieve substantially constant temperature as a function of time during a trimming pulse.

26. A circuit for trimming a functional resistor, the circuit comprising:

a thermally-isolated micro-platform on a substrate;

a plurality of functional resistors spaced apart on the thermally-isolated micro-platform; and

trimming circuitry for subjecting a portion of the thermally-isolated micro-platform to heat pulses such that a resistance value of one of said plurality of functional resistors is trimmed while a resistance value of remaining ones of said plurality of functional resistors remains substantially untrimmed.

27. A circuit as claimed in claim 26, wherein said trimming circuitry comprises circuitry for passing a signal through said one of said plurality of functional resistors.

28. A circuit as claimed in claim 26, wherein said trimming circuitry comprises at least one heating resistor on said micro-platform for receiving a signal and trimming said one of said plurality of functional resistors.

29. A circuit as claimed in claim 28, wherein each of said at least one heating resistor traces at least one of said plurality of functional resistors.

30. A circuit as claimed in claim 29, wherein a first pair of functional resistor and heating resistor is grouped and embedded with a second pair of functional resistor and heating element so that locations of portions of said first pair and said second pair alternate on said thermally-isolated micro-platform.

31. A circuit as claimed in claim 30, wherein said portions of said first pair and said second pair are separated by slots in said thermally-isolated micro-platform, thereby reducing heat transfer and increasing thermal isolation between said first pair and said second pair.

32. A circuit as claimed in claim 31, wherein said slots are continuous.

33. A circuit as claimed in claim 26, wherein said trimming circuitry comprises circuitry for transmitting a plurality of electrical pulses and measuring said

resistance value of one of said plurality of functional resistors in between each of said plurality of electrical pulses to determine whether a target resistance value has been obtained.

34. A circuit as claimed in claim 26, wherein said trimming circuitry comprises circuitry for transmitting dynamically-shaped pulses to achieve substantially constant temperature as a function of time during a trimming pulse.

35. A circuit for trimming circuit elements, the circuit comprising:

at least one thermally-isolated micro-platform on a substrate;

at least two resistive elements with non-zero temperature induced drift on said at least one thermally-isolated micro-platform, such that said at least two resistive elements on said at least one micro-platform are subjected to a substantially same operating environment, at least one of said at least two resistive elements on said at least one micro-platform being thermally trimmable; and

trimming circuitry for thermally trimming said at least one of said at least two resistive elements;

wherein said at least two resistive elements are connected together in said circuit in a manner to compensate for said operating environment on said at least one micro-platform, and heat generated on the at least one micro-platform is distributed among the at least two circuit elements such that an effect of temperature drift is compensated.

36. A circuit as claimed in claim 34, wherein said at least two resistive elements are connected together in series and an applied voltage is divided with a predetermined ratio.

37. A circuit as claimed in claim 34, wherein said at least two resistive elements are temperature sensitive elements located closely on said at

least one thermally-isolated micro-platform, and whose signals are combined to measure a temperature differential.

38. A circuit as claimed in claim 34, further comprising a heating resistor on the at least one thermally-isolated micro-platform in close proximity to said at least one resistive element, wherein said trimming circuitry further circuitry for passing a signal through the heating resistor to increase its temperature significantly for the purpose of trimming said at least one resistive element.

39. A method as claimed in claim 37, wherein said heating resistor and said at least one resistive element are on separate thermally-isolated micro-platforms.

40. A circuit as claimed in claim 34, wherein said trimming circuitry for heating further comprises circuitry for transmitting a plurality of electrical pulses and measuring said resistance value of one of said at least two resistive elements in between each of said plurality of electrical pulses to determine whether a target resistance value has been obtained.

41. A circuit as claimed in claim 34, wherein said trimming circuitry for heating comprises circuitry for transmitting dynamically-shaped pulses to achieve substantially constant temperature as a function of time during a trimming pulse.

42. A circuit for trimming a functional resistor, the circuit comprising:

a thermally-isolated micro-platform on a substrate;

a functional resistor on said thermally-isolated micro-platform subject to a heat source having a power dissipation geometry adapted to obtain a substantially constant temperature distribution across said functional resistor when a temperature of said functional resistor is raised for trimming purposes; and

trimming circuitry for trimming the functional resistor.

43. A circuit as claimed in claim 42, wherein said heat source comprises a heating resistor on said thermally-isolated micro-platform in close proximity to said functional resistor, and wherein said trimming circuitry comprises circuitry for passing a signal through said heating resistor to trim said functional resistor.

44. A circuit as claimed in claim 42, wherein said power dissipation geometry comprises a heater path that encircles the functional resistor.

45. A circuit as claimed in claim 42, wherein said power dissipation geometry further comprises a heater path that provides more heat to edges of the functional resistor and resulting temperature gradients across the at least one thermally-isolated micro-platform.

46. A method as claimed in claim 42, wherein said power dissipation geometry comprises a heater path that substantially encloses said functional resistor with said heating resistor.

47. A method as claimed in any one of claims 42 to 46, wherein said power dissipation geometry further comprises an increased density of resistive lines near locations where there is greater heat loss to compensate for the heat loss.

48. A circuit as claimed in claim 42, wherein said trimming circuitry for heating comprises circuitry for transmitting a plurality of electrical pulses and measuring said resistance value of one of said plurality of functional resistors in between each of said plurality of electrical pulses to determine whether a target resistance value has been obtained.

49. A circuit as claimed in claim 42, wherein said trimming circuitry for heating comprises circuitry for transmitting dynamically-shaped pulses to achieve substantially constant temperature as a function of time during a trimming pulse.

50. A method for calculating a temperature coefficient of resistance of a functional resistor, the method comprising:

providing at least one thermally-isolated micro-platform on a substrate;

placing a functional resistor on said at least one thermally-isolated micro-platform;

heating said functional resistor;

measuring a resistance value of said functional resistor at a plurality of temperatures; and

calculating said temperature coefficient of resistance based on said measured resistance values.

51. A method as claimed in claim 50, further comprising placing a heating resistor on said at least one thermally-isolated micro-platform and wherein said heating comprises heating said functional resistor by passing a signal through said heating resistor.

52. A method as claimed in claims 50 or 51, further comprising measuring a resistance value at a plurality of elevated temperatures in order to determine how said temperature coefficient of resistance varies as a function of temperature.

53. A method as claimed in any one of claims 50 to 52, wherein said micro-platform comprises a plurality of said functional resistors, said heating of said functional resistor comprising heating of said micro-platform to heat all of said functional resistors at a same time, said measurement and said calculating being performed substantially simultaneously for all of said functional resistors.

54. A circuit for calculating a temperature coefficient of resistance of a functional resistor, the circuit comprising:

at least one thermally-isolated micro-platform on a substrate;

a functional resistor on said at least one thermally-isolated micro-platform;

heating circuitry for heating said functional resistor;

measuring circuitry for measuring a resistance value of said functional resistance at a plurality of temperatures; and

calculating circuitry for calculating said temperature coefficient of resistance based on said resistance value at said temperatures.

55. A circuit as claimed in claim 54, wherein said heating circuitry comprises a heating resistor on said at least one thermally-isolated micro-platform for passing a signal through said heating resistor and heating said functional resistor.